

REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the subject application. The Non-Final Office Action of June 27, 2003 has been received and its contents thoroughly reviewed.

The Examiner rejected claims 1-20 under 35 U.S.C. § 103(a) as being unpatentable over Ahan (UK Pat. App. Pub. No. GB 2 325 329 A) in view of Bassetti, Jr. (U.S. Pat. No. 5,122,783, herein referred to as "Bassetti"). The rejection of these claims is traversed and reconsideration of the claims is respectfully requested in view of the following remarks.

Preliminarily, Applicants note claims 1-22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ahan in view of Bassetti. However, claims 21 and 22 do not exist within the present application. Accordingly, and for purposes of prosecution, Applicants hereby assume the Examiner intended to rejected only claims 1-20.

The rejection of claims 1-20 under 35 U.S.C. § 103(a) as being unpatentable over Ahan in view of Bassetti is traversed and reconsideration is respectfully requested.

Independent claim 1 is allowable over the cited art in that claim 1 recites a combination of elements including, for example, "...consecutively providing the color data signals having a same color to the data lines by the demultiplexer unit before applying a different color signal." None of the cited references, including Ahan or Bassetti, either singly or in combination, teaches or suggest at least this feature of the claimed invention. Accordingly, Applicant respectfully submits claims 2-10, which depend from claim 1, are also allowable over the cited references.

Independent claim 11 is allowable over the cited art in that claim 11 recites a combination of elements including, for example, "...the demultiplexer consecutively providing

the color data signals having a same color to the data lines before applying a different color signal.” None of the cited references, including Ahan or Bassetti, either singly or in combination, teaches or suggest at least this feature of the claimed invention. Accordingly, Applicant respectfully submits that claims 12-20, which depend from claim 11, are also allowable over the cited references.

To establish a *prima facie* case of obviousness, (1) there must at least be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the reference teachings and (2) the references when combined must teach or suggest all the claim limitations. See M.P.E.P. § 2143. Further, there must be some objective reason to combine the reference teachings.

In rejecting claims 1-20, the Examiner cites Ahan as not teaching “consecutively providing the color data signals having a same color to the data lines by the demultiplexer unit before applying a different color” and cites Bassetti as disclosing “...in Fig. 3A, and in col. 6, lines 47-68, where color data signals having a same color are consecutively provided to the data lines before applying a different color.”

Applicants respectfully submit, however, that none of the cited references, including Ahan or Bassetti, either singly or in combination, teaches or suggest at least the aforementioned combination of elements.

For example, at column 6, lines 47-68, Applicants respectfully submit Bassetti discloses

“Referring to FIG. 3A, in a practical application it is desirable to have a large matrix of color-producing areas so that high definition images may be created. FIG. 3A shows a schematic front view of a display system 300 in which different color-producing sub-areas, 311 (R), 312 (G) and 313 (B), are placed close to one another to define a first pixel area Px.sub.11 in a flat panel screen

area 310. The same pattern of color-producing sub-areas is repeated in a horizontally adjacent pixel area Px.sub.12, then again in a next horizontally adjacent pixel area Px.sub.13, and so on, to define a horizontal row of colored pixel areas, Px.sub.11, Px.sub.12, Px.sub.13, . . . , Px.sub.1N. The pattern is repeated vertically so that a vertically adjacent row contains pixels Px.sub.21, Px.sub.22, Px.sub.23, . . . , Px.sub.2N. A large number of rows and columns (e.g., 480 by 720) is typically defined on the face of the display panel 310. For the sake of brevity, multi-colored pixel areas will be referred to here simply as pixels, single-colored pixel sub-areas will be referred to as sub-pixels and an NxM matrix of pixel areas, where both N and M are much greater than one, will be referred to as a screen area."

Accordingly, Applicants respectfully submit Bassetti fails to show at least the "consecutively providing the color data signals having a same color to the data lines by the demultiplexer unit before applying a different color signal," as asserted by the Examiner.

In the "Response to Arguments" section of the outstanding Office Action, the Examiner states "Bassetti discloses in Fig. 3A and in col. 7, lines 1-31 for consecutively providing the color data signals having the same color before applying a different color."

Applicants respectfully submit that, while Bassetti teaches at column 7, lines 1-8

"The display system 300 of FIG. 3A is multiplexed. A gridwork of vertical wires 321, 322, 323, etc. and horizontal Wires 331, 332, 333, etc. cross at the color-producing sub-areas 311, 312, 313, etc. of flat panel 310 in order to selectively energize each of the color-producing sub-areas (once during each of a series of frame periods) towards at least one of the ON (100%) and OFF (0%) states."

However, Bassetti fails to teach or even suggest consecutively providing color data signals having a same color to data lines by a multiplexer before applying a different color signal, as is presently claimed.

Further in the "Response to Arguments" section of the outstanding Office Action, the Examiner states "Bassetti discloses where the sub-areas are energized, where the sub areas are

shown in col. 6, lines 52, to be items 311, 312 and 313, which are individual colors. Thus it is shown by Bassetti that each sub area is energized.”

Assuming *arguendo* that the Examiner’s interpretation of Bassetti above is correct, Applicants respectfully submit the fact that sub-areas of individual colors within Bassetti may be energized does not automatically support an assertion that sub-areas of the same color are energized by data lines before sub-areas of other colors are energized.

In concluding the rejection, the Examiner states it would have been obvious “...to incorporate the feature of Bassetti into that of [Ahan] as they both teach a method of driving liquid crystal displays. The system of [Bassetti] is advantageous as it reduces the number of scanning lines, thus reducing power consumption and expense.”

According to M.P.E.P. § 2144.02, the rationale to support a rejection under 35 U.S.C. § 103 may rely solely on logic and sound scientific principle. However, when an Examiner relies on a scientific theory, evidentiary support for the existence and meaning of that theory must be provided.

Therefore, assuming *arguendo* Bassetti discloses “consecutively providing the color data signals having a same color to the data lines by the demultiplexer unit before applying a different color signal”, it appears from the Examiner’s theory, that incorporating the “feature of Bassetti into that of Ahan” would “[reduce] the number of scanning lines, thus reducing power consumption and expense,” and thus render the claimed invention obvious.

Applicant respectfully submits, however, evidentiary support for the existence and meaning of the theory outlined above must be, but has not been, provided. In the absence of such support, Applicant respectfully submits Ahan and Bassetti have merely been combined using the presently claimed invention as a template via improper hindsight reasoning.

After a thorough review of Bassetti, Applicant respectfully submits Bassetti expressly teaches away from the presently claimed invention. For example, Bassetti further discusses signals applied to the display system 300 illustrated in Figure 3A at column 7, lines 58-65, Bassetti stating

“Referring to FIG. 3B, there are illustrated four synchronous plots respectively showing the value, Modulo-N (Frame Number), and three brightness-setting waveforms respectively denoted as $B(1/3)P(0)$, $B(1/3)P(1)$, and $B(1/3)P(2)$, each plotted against time. Each waveform has a plurality of short duration pulses 340 and an FRDC of $1/3$ attributed to it but a different "phase number", $P(x)$, where $x=0, 1, 2$.”

At column 8, lines 22-40, Bassetti states

“In the example of FIG. 4, the first phased waveform $B(1/3)P(0)$ is applied to energize all sub-pixels of column numbers 1, 4, 7, etc. within screen area 310. The second waveform $B(1/3)P(1)$ is applied to energize all sub-pixels within columns 2, 5, 8, etc. The third waveform $B(1/3)P(2)$ is applied to energize all sub-pixels within columns 3, 6, 9, etc. During the display of Frame 0, the image is as indicated at 400, with columns 1, 4, 7, etc. being lit up. During Frame 1, the image is as indicated at 400', with columns 2, 5, 8, etc. being lit up. During Frame 2, the image is as indicated at 400'', with columns 3, 6, 9, etc. being lit up. The image for Frame 3 is 400. The image for Frame 4 is 400' and so on. This pattern repeats forever. A left to right movement of lit up areas is perceived across the screen if the rate is less than a persistence characteristic of the human eye 130. The movement is seen because of the asymmetrical positioning of lit up pixels over time. Once the movie marquee effect is perceived, it can become quite annoying.”

and further states at column 8, lines 47-49,

“The above-cited copending application of Bassetti explains how to minimize the movie marquee effect in multiplexed monochrome LCD flat panel displays by using a symmetric, square matrix, preferably of a seventeen-by-seventeen configuration. One question presented here is how to minimize flickering and streaming in multi-color displays where the display technology could be either multiplexed or active matrix.”

Bassetti then sets out the method by which multiple colors are to be displayed by a display system, stating at column 9, lines 1-36

“...If all the pixels of a screen area are commanded to display only one pure color, e.g., red, then the problem of flicker and movie marquee avoidance reduces to the monochrome problem. If all the pixels of a relatively large screen area are commanded to a single mixed color (e.g. R and G both ON while B is OFF), then the active color planes can be hypothetically merged together if the phases of their driving signals are the same, and again the problem reduces to the monochrome situation... ...Referring to FIGS. 5A, 5B, 6, 7A and 7B, it was discovered that at least two or three different phase placement patterns should be made available for avoiding the perception of streaming in high-speed active matrix displays and low-speed multiplexed displays. ...Referring first to FIG. 5A, consider the case of a large screen area which is to be operated with a frame rate duty cycle (FRDC) of $\frac{1}{3}$. The screen area is divided into hypothetical square areas each of dimensions three-pixels by three-pixels. One such square area is high-lighted as $M_{3,3}$ within FIG. 5A.”

Continuing at column 9, lines 43-52, Bassetti teaches

“The number of ON pixels (of one hypothetical color plane) are preferably distributed evenly across the surface of each $M_{3,3}$ tile and across the duration of the frames repetition group (FRG) to avoid flickering and movie marquee effects. Thus, in Frame 0, the three pixel areas of (row, column) coordinates, (1,2), (1,3) and (2,1) are lit up. In Frame 1, pixel areas (1,1), (2,2) and (3,3) are lit up. In Frame 2, pixel areas (2,3), (3,1) and (3,2) are lit up. This pattern is then repeated frame after frame.”

As explicitly disclosed by Bassetti, pixel areas (i.e., pixel areas Px 11, Px12, etc., as described with reference to Figure 3A) are energized as columns, wherein each column has repeatedly alternating red, green, and blue sub-pixels. Therefore, the color data signals of Bassetti have red, green, and blue signals intermixed. Therefore, Bassetti does not disclose a display system capable of displaying multiple colors (i.e., non-monochromatic displays) that receives color data signals of the same color to the data lines before receiving color data signals of a different color, as presently claimed. According to M.P.E.P. § 2143.01, obviousness can

only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. In view of the above, Applicant respectfully submits Bassetti includes no teaching, suggestion, or motivation, either implicitly or explicitly, to modify Ahan and arrive at the claimed invention.

Accordingly, Applicants respectfully submit that claims 1 and 11, and claims 2-10 and 12-20, which depend from claims 1 and 11, respectively, are allowable.

Applicants believe the foregoing amendments place the application in condition for allowance and early, favorable action is respectfully solicited. Should the Examiner deem that a telephone conference would further the prosecution's application, the Examiner is invited to call the undersigned representative at (202) 496-7500.


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Applicants hereby authorize the Commissioner of Patents to charge any fees necessary to complete this filing, including any fees required under 37 C.F.R. § 1.136 for any necessary extension of time to make the filing of the attached documents timely, or credit any overpayment and fees to Deposit Account No. 50-0911. A duplicate copy of this sheet is enclosed.

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